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Spaceport News

John F. Kennedy Space Center - America's gateway to the universe

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INSIDE . . .

CLICK ON PHOTO *NASA/Frankie Martin*

Bathed in xenon lights, space shuttle Endeavour makes its nighttime journey from the Vehicle Assembly Building to Launch Pad 39A at Kennedy Space Center on March 10. Riding atop a crawler-transporter attached to its external fuel tank and solid rocket boosters, Endeavour's 3.4-mile trek, known as "rollout," began at 7:56 p.m. EST. This is the final scheduled rollout for Endeavour. To watch Endeavour's final rollout, click the photo.

Endeavour shines, rolls out final time under xenon lights

By Frank Ochoa-Gonzales
Spaceport News

Under a beautifully bright March 10 crescent moon, space shuttle Endeavour emerged from the Vehicle Assembly Building to the cheers of hundreds of workers, thousands of onlookers and a member of its final flight crew.

But the biggest smile may have belonged to Dana Hutcherson, NASA's Endeavour Flow Director within the Launch Vehicle Processing Directorate.

Hutcherson's third mission as Endeavour's flow director is a bittersweet one, because it is the final time the shuttle will roll over the Alabama river rock to Launch Pad 39A.

"It being the final launch, this is not an easy time for us," Hutcherson said. "But nonetheless, we are enjoying it."

Riding atop a crawler-transporter for the last time, Endeavour and its launch-ready stack of solid rocket boosters and external fuel tank moved down the graveled crawlerway at the usual rollout pace of about 1 mph. The ride took about eight hours and left Endeavour perched at pad A to lift off next month on a mission to the International Space Station.

"While the team and I are really excited to see Endeavour roll out to the launch pad one final time, it really is just one step getting us closer to launch," Hutcherson said. "This is where we kick it in high gear getting ready for launch and our No. 1 mission, which is to fly safely."

STS-134 Pilot Greg H. Johnson will fly aboard Endeavour to the International Space Station and was on hand to watch the shuttle make the 3.4-mile trek to the seaside launch pad.

"There's so much energy here at Kennedy Space Center," Johnson said. "It was amazing to

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EAP offers counseling after fall at launch pad

By Linda Herridge
Spaceport News

Kennedy Space Center's work force suffered an unexpected loss on March 14, when one of its own died following a fall at Launch Pad 39A. NASA emergency medical personnel responded but were unable to revive United Space Alliance engineer James Vanover.

Workers were offered counseling and Employee Assistant Program services.

"Our closeness as a team makes it more painful when we lose one of our own," Kennedy Center Director Bob Cabana said in a letter to Kennedy employees. "It is our concern for each other that enables our mission to succeed."

Cabana urged everyone to take a moment and reflect on taking care of themselves and each other.

According to Employee Assistance Counselor Patti Bell, Kennedy's Employee Assistance Program (EAP) offers counseling and a variety of other services to all employees at Kennedy and Cape Canaveral Air Force Station. Bell is with Innovative Health Applications (IHA) on the center's Medical Environmental

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Legendary firefighter retires after 30 years

By Steven Siceloff
Spaceport News

George Hoggard had an extraordinary career by most standards, so it wasn't easy for him to say goodbye to the fire department at Kennedy Space Center.

"People who don't know anything about the space program cannot imagine how exciting it is to work out here," Hoggard said. "The very idea of it lasting 30 years never dawned on me and I never did have any retirement plans because working out here is so much fun. Quite frankly, I'm thinking, 'Why would I want to leave this?'"

As the chief of fire training, Hoggard and his crew worked closely with astronauts to teach them how to handle emergencies on the launch pad or on the ground following a problem. He showed them where to go once they left the shuttle cockpit, such as when to take the elevator and when to go straight to the slidewire basket. He and then-astronaut Charlie Bolden took a ride in one of the baskets in the late 1980s to prove they were safe.

Bolden, returning as NASA administrator, gave Hoggard a commemorative medallion during his retirement party the day before space shuttle Discovery lifted off on its final flight, the STS-133 mission.

Hoggard's skill and dedication came across to the astronauts very easily and made the firefighter a true legend at Kennedy, Shuttle Launch Director Mike Leinbach said.

"The astronauts know they can trust him with their lives, and that says an enormous amount about his experience, heart and wisdom," Leinbach said.

It's a far different existence than Hoggard thought he would have. After getting out of the Marines, Hoggard thought he'd go into the family business: law enforcement. His father and brother were both policemen, and Hoggard joined the force. He was assigned to the vice squad and during the next year had some close calls, including getting stabbed and shot at.

Later, working as a firefighter in southeastern Virginia, Hoggard's career turned again after a friend of his told him about the construction under way on NASA's Kennedy Space Center.

CLICK ON PHOTO *NASA/Kim Shiflett*

Outgoing Kennedy Space Center Chief of Fire Training George Hoggard received a commemorative medallion during his retirement party from NASA Administrator Charlie Bolden on March 9. For the complete story, click the photo.

Hoggard's firefighting career at Kennedy began with a level of excitement that would become the norm.

"I was really new out here and got to go out to the fire training area and they said three astronauts were going to show up and I didn't know who they were," Hoggard said. "And they left and I had no idea who they were and six months later they stepped on the moon . . . it was the Apollo 11 crew."

"When the shuttle started up we kind of had to sort of reinvent everything because there wasn't going to be just three astronauts, there were going to be as many as seven astronauts in there," Hoggard said.

Hoggard and his team taught the astronauts before each launch how to drive the yellow M113 armored personnel carriers. The lessons would be critical if there was an emergency and the crew had to drive out of harm's way.

"I tell the astronauts the shuttle cockpit's got over 2,000 switches, this one's only got two, on and off, and it's easy as it can be," Hoggard said.

Hoggard still has a rule, though: "They said, 'Is there a pass/fail to this driving test,' and I said, 'Yeah, if you hurt the old guy, you're going to fail the test, that's the bottom line, don't hurt the old guy.' "

Hoggard saw different perspectives of NASA when he conducted training classes at the agency's other field centers.

"They ask, 'Have you seen a launch?' And I'm like, 'Yeah, I don't close my eyes,'" he said. "Then they asked, 'Well, what's that like?' Then it dawned on me, there are thousands of people who work for NASA and NASA contractors who have never seen a launch and I've seen many of them and that's just kind of amazing. It's a shame that everybody can't be in the position that I am here at Kennedy."

NASA selects board to investigate Glory mishap

NASA has selected the members of the board that will investigate the unsuccessful March 4 launch of the Glory spacecraft.

Bradley C. Flick, director of the Research and Engineering Directorate at NASA's Dryden Flight Research Center in Edwards, Calif., will lead the mishap investigation board.

On March 4, the Orbital Sciences Taurus XL launch vehicle, carrying a NASA satellite intended to improve our understanding of how the sun and tiny atmospheric particles called aerosols affect Earth's climate, failed to reach orbit after it launched from Vandenberg Air Force Base in California.

According to NASA Assistant Launch Director Chuck Dovale, early indications are the fairing failed to open and break away from the rocket's final stage.

We failed to make orbit," said Omar Baez, the NASA launch director for the Glory mission. "All indications are that the satellite and the rocket's third stage are in the southern Pacific Ocean above Antarctica."

Flick is responsible for the technical and administrative management of the directorate's engineering work force at Dryden. He also has served as Dryden's chief engineer and was responsible for providing independent technical guidance and oversight to flight projects.

Orbital Sciences also will have a failure board.

No pieces of the spacecraft have been found and no injuries or property damage has been reported either. And since few of the spacecraft's part are salvageable, there is no recovery effort planned at this time.

The second stage re-entered the atmosphere near the French Polynesian island of Mangareva in the South Pacific.

The ex-officio member is Christopher Nagy, Safety and Mission Assurance manager at Kennedy Space Center. The ex-officio member assures board activity conforms to NASA procedural requirements.

The board has six other voting members: LeRoy E. Cain, deputy manager, Space Shuttle Program, Johnson Space Center, Houston; Daniel Dorney, supervisory aerospace engineer, NASA's Marshall Space Flight Center, Huntsville, Ala.; Todd Hinkel, lead, Johnson Space Center Pyrotechnics Group; Stacey Nakamura, chair, Johnson Space Center Safety and Engineering Review Panel; Air Force Capt. Benjamin Califf, deputy chief, Space Launch Section, Kirtland Air Force Base, Albuquerque, N.M.; and Barbara Kanki, research psychologist, NASA's Ames Research Center, Moffett Field, Calif.

The board began its investigation March 9.

Members will gather information, analyze the facts, identify the failure's cause or causes and identify contributing factors. The board will make recommendations to the NASA administrator to prevent similar incidents.

Discovery transitions to retirement

By Steven Siceloff
Spaceport News

A long list of inspections await space shuttle Discovery as technicians at NASA's Kennedy Space Center in Florida take the first steps to prepare the agency's oldest active orbiter for retirement.

Discovery touched down Wednesday, March 9, just before noon to complete the 13-day STS-133 mission to the International Space Station. The shuttle and its crew of six astronauts delivered the last pressurized module to the U.S. side of the orbiting outpost, a large closet of sorts called the Permanent Multipurpose Module.

Standing on the runway at Kennedy, STS-133 Commander Steve Lindsey described bittersweet feelings of bringing home NASA's most veteran orbiter for its 39th and final time.

"As the minutes pass, I'm actually getting sadder and sadder about this being the last flight and I know all the folks involved with the shuttle program feel the same way," Lindsey said.

A few hours after landing at Kennedy's Shuttle Landing Facility, Discovery was back inside an orbiter processing facility going through standard post-landing procedures.

As the standard work is completed, Transition and Retirement Flow Director Stephanie Stilson said technicians will make a series of inspections to find out whether there are any lurking issues that could pose concerns to shuttles Endeavour and Atlantis as they make their own final flights.

"We'll see if there's any problem anomalies that we have to go say, 'Hey, you guys may want to go look at this as well,'" Stilson said. "We'll go through basically our standard testing and checkout initially, right after landing, so that's business as usual."

CLICK ON PHOTO *NASA/Bill Ingalls*

Space shuttle Discovery's drag chute is fully deployed on Runway 15 at Kennedy Space Center's Shuttle Landing Facility as it returns from its 13-day, 5.3-million-mile STS-133 mission. Main gear touchdown was at 11:57:17 a.m., followed by nose gear touchdown at 11:57:28 a.m., and wheelstop at 11:58:14 a.m. Click the photo to watch footage from Discovery's final mission.

There are no signs of hidden dangers, and indeed astronauts and technicians often note that the shuttle looks pristine, as though it had not even gone into space before. Nevertheless, the retirement gives technicians and engineers a chance to delve deep into the spaceframe to areas that have not been seen recently.

"There's some hydraulics systems, some other things that we really haven't had a chance to look at because it was really too invasive to get in there and look at so we're going to request that the teams pull some of those components out and do some forensics," said Bill Gerstenmaier, associate administrator of Space Operations.

The inspections will not be unique to Discovery. Atlantis and Endeavour also will be examined closely for similar conditions. By the time all three orbiters are inspected, NASA is expected to have a detailed encyclopedia to pass on to future spacecraft designers.

"We can still learn a lot from these vehicles," Gerstenmaier said. "We're going to learn everything we can and archive it so when we go to build the next generation (spacecraft) we will have actually learned everything we can from these vehicles."

The space shuttle main engines, considered by some to be the most advanced rocket design ever, also will get a heavy dose of attention during the transition phase, according to Mike Moses, the shuttle's launch integration manager.

In fact, although the three shuttles will go to museums, they will not take their engines with them. Instead, they will sport dummy engine nozzles that will look exactly like the real thing. NASA is going to keep the real engines in its inventory, potentially using them on a future rocket or as a head start to design the next engines.

"From the outside, it'll look like real engines, but the inner workings, the turbopumps and all those high-tech things that make engines so special, they won't be part of the display," Stilson said. The exclusion won't be noticeable to visitors, though, because the powerhead of a main engine is hidden inside the aft compartment anyway.

The OMS pods and the forward reaction control system will be detached from the shuttles at Kennedy and shipped to White Sands, New Mexico, for disassembly. The OMS engines use hypergolic propellants, so any part or seal that could release harmful elements in the future will be removed there.

The 6,000-pound thrust engines in the OMS pods will be removed from the pods and replaced with replicas before they are reattached to the shuttle for public display.

Other than those things, though, NASA intends to have the rest of the shuttle look just as it did the last time it went into orbit.

"For the most part, they will remain intact," Stilson said. "We want to keep them looking as flight-like as possible."

From **EAP**, Page 1

Support Contract.

EAP provides services to employees experiencing emotional stress, mental health disorders, family or relationship difficulties, financial and/or legal concerns, and alcohol and substance abuse problems.

"In the event of a critical incident, the EAP uses a variety of services to assist management and employees in responding to a workplace crisis to support business continuity and employee recovery," Bell said.

She said workplace critical incidents are sudden, unexpected events that often are significant enough to overwhelm normal coping responses. They vary in type and severity and can affect employees as well as management. Bell said the EAP and its Critical Response Team are trained to facilitate group debriefings, defusing and education sessions to assist in processing the reactions to an abnormal event.

The EAP is available 24 hours, seven days a week for anyone who needs to talk. To schedule a group meeting or one-on-one counseling, call Bell at 861-8647, or Walt Hersing at 867-7398.

For assistance after hours, call 866-315-7380.

More information

Innovative Health Applications other medical services include occupational medicine, occupational health examinations, non-emergency treatments, administrative management, Travel Medicine Program, Health Education and Wellness Program, health training, fitness, Medical Education Program, massage therapy and musculoskeletal rehabilitation services.

NASA/Jack Pfaller

Space shuttle Endeavour stands ready for processing beside the rotating and fixed service structures on Launch Pad 39A at Kennedy Space Center on March 11. Launch is targeted for 7:48 p.m. EDT April 19.

From **ROLLOUT**, Page 1

meet so many people, some of who have spent their entire career working on the Space Shuttle Program."

The Alpha Magnetic Spectrometer-2 (AMS) is part of the payload for Endeavour's final mission. A large physics experiment, AMS was designed by Nobel laureate Professor Sam Ting to determine the nature of cosmic rays in space.

AMS will be connected to the outside of the International Space Station during STS-134. From that location, the 15,000-pound AMS, with its ring of powerful magnets and super-sensitive detectors, may be able to capture definitive signatures of the invisible rays that pass through the universe. The findings could unlock the secrets of everything from dark energy to antimatter to the radiation fields astronauts must traverse on their way to Mars or deep space.

AMS is scheduled to take a separate ride to the pad during the early evening of March 21. Like the shuttle, it will ride on a specialized transporter designed to treat shuttle payloads with extra care.

Endeavour last flew on STS-130, when it was used to carry the Tranquility node and the windowed cupola to the space station. Since landing Feb. 21, 2010, the shuttle spent most of its time in Orbiter Processing Facility-1 being prepped for this flight.

"We've had times where we've been able to sit back and reflect a little bit," Hutcherson said. "We've shared some photos and videos with the team, we have a lot of that camaraderie, this is our extended family. We care very much about the people we work with. As you can see at rollout, a lot of people love what they do and love to share this with their family."

Endeavour moved to the Vehicle Assembly Building on Feb. 28, where it was lifted and connected to the rest of the stack. Although the lifting operations were perfected long ago in the shuttle program, the maneuver still drew a crowd of photographers and spectators.

The largest crane in the Vehicle Assembly Building descended from the ceiling to connect to space shuttle Endeavour for the last time later that day. The next day, Endeavour made its final trip up to the rafters before being lowered into place on its external fuel tank.

Hutcherson said: "It would be nice if I could be king for a day and make the world come to a stop so everyone could watch these final launches and ingest what the Space Shuttle Program has done."

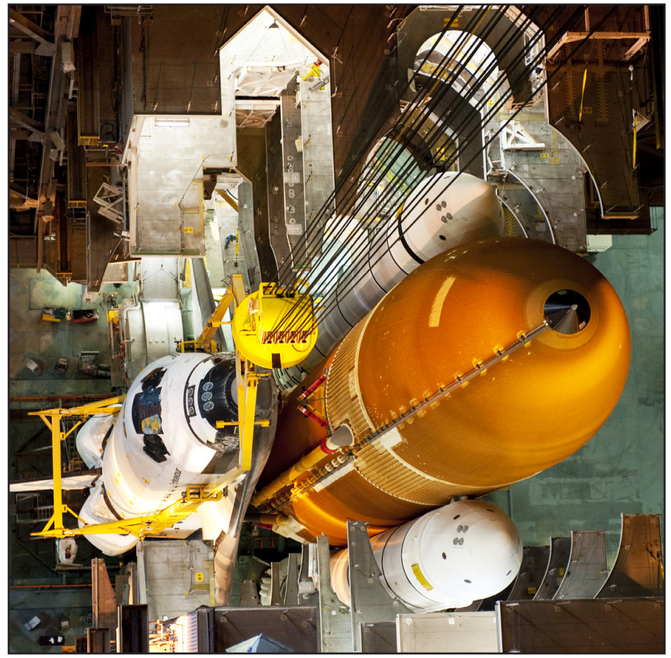
NASA/Frankie Martin

Employees hold up a banner to commemorate shuttle Endeavour's STS-134 mission as it is transported from Kennedy Space Center's Orbiter Processing Facility-2 to the Vehicle Assembly Building on Feb. 28.

NASA/Frankie Martin

A large yellow, metal sling lifts shuttle Endeavour from the transfer aisle into a high bay of the Vehicle Assembly Building at Kennedy Space Center on March 1.

Endeavour's Recent Endeavors



NASA/Kim Shiflett

Shuttle Endeavour is lowered into place for attachment to its external fuel tank and solid rocket boosters already positioned on the mobile launcher platform in the Vehicle Assembly Building on March 1 at Kennedy Space Center.

NASA/Jack Pfaller

Shuttle Endeavour is secured to a transporter for its move, or "rollover" from Orbiter Processing Facility-2 to the Vehicle Assembly Building (VAB) on Feb. 28.

NASA

Media gather outside Orbiter Processing Facility-2 to photograph shuttle Endeavour's move, or "rollover," to the Vehicle Assembly Building at Kennedy Space Center on Feb. 28.

NASA/Kim Shiflett

Shuttle Endeavour is lowered into place for attachment to its external fuel tank and solid rocket boosters already positioned on the mobile launcher platform in the Vehicle Assembly Building on March 1 at Kennedy Space Center.

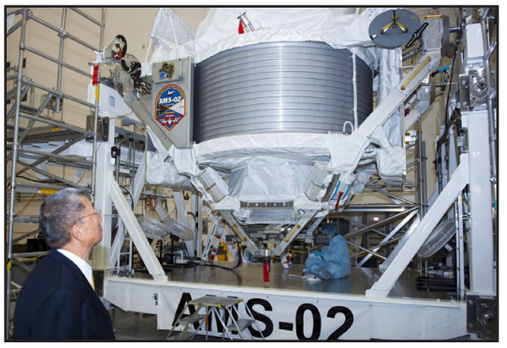
Scenes Around Kennedy Space Center

CLICK ON PHOTO *NASA/Kim Shiflett*

Kennedy Center Director Bob Cabana holds the "Big Ticket" for admission to the KSC All-American Picnic, scheduled for April 2 from 10 a.m. to 4 p.m. All civil service, contractors, and Cape Canaveral Air Force Station personnel associated with a NASA program, and their families, are invited to attend. This year marks the 32nd anniversary of the picnic, "Celebrating 47 Years of Success at the Kennedy Space Center." The fully catered picnic will include a choice between a traditional barbeque or vegetarian meal. Scheduled events include live entertainment, community exhibitions, children's games, a car and motorcycle show, the popular chili cook-off, and much more. Tickets are on sale through March 30. Prices are $8 for adults and $6 for children ages 3 to 12 (children ages 2 and younger get in free). Volunteers will receive a discounted ticket of $5 and a T-shirt. For more information, call Eli Schoen at 321-867-8894.

NASA/Jack Pfaller

A United Space Alliance technician examines one of shuttle Atlantis' thermal protection tiles in Orbiter Processing Facility-1 at Kennedy Space Center on March 1. The tile went through a pull test, which measures the force it takes to pull it off of the shuttle and makes sure the bond between the two is strong enough to withstand the force of launch and landing.



NASA/Glenn Benson

Professor Sam Ting, Alpha Magnetic Spectrometer-2 (AMS) principal investigator at the Massachusetts Institute of Technology, checks out the particle physics detector in the Space Station Processing Facility at Kennedy Space Center. AMS is designed to operate as an external experiment on the International Space Station. It will use the unique environment of space to study the universe and its origin by searching for dark matter.

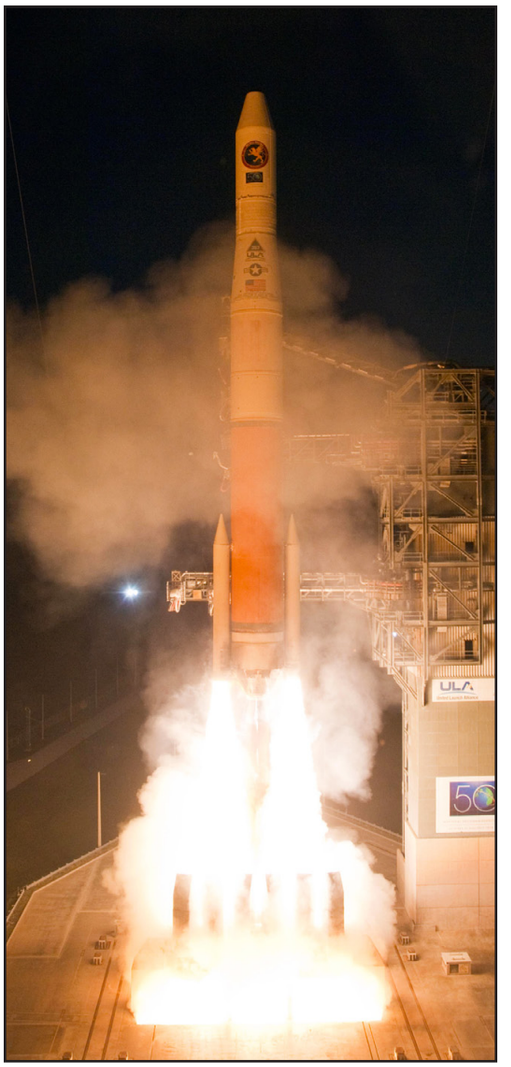


Photo courtesy of Pat Corkery, United Launch Alliance

The United Launch Alliance Delta IV launches with a National Reconnaissance Office payload at Space Launch Complex-37 on March 11 at 6:38 p.m. EST. The Delta IV is 211-feet tall and has more than one million pounds of thrust at liftoff. This is the third launch of the year for ULA and the 16th flight of the Delta IV family of launch vehicles.

NASA/Kim Shiflett

Workers move quick at the slidewire basket landing site of Launch Pad 39A during an emergency exit, or Mode II/IV on March 1. The exercise involves NASA fire rescue personnel, volunteers portraying astronauts with simulated injuries, helicopters and personnel from the Air Force's 920th Rescue Wing, and medical trauma teams at three Central Florida hospitals.

NASA/Kim Shiflett

An inflatable model of rover Curiosity was on display Feb. 9 as the Jet Propulsion Laboratory's Mars Science Laboratory Launch Services Office Manager David Woerner shared information about the science mission and the rover in the Operations and Checkout Building's Mission Briefing Room. Curiosity is scheduled to launch from Kennedy Space Center on Nov. 25.

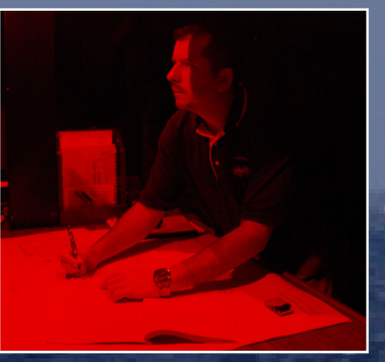
SRB retrieval ships tow shuttle's lifelines to shore

CLICK ON PHOTO *NASA/Tony Gray and Tom Farrar*

To watch a video taken from Discovery's solid rocket boosters during the STS-133 liftoff, separation and splashdown on Feb. 24, click on the photo above.

CLICK ON PHOTO *NASA/Ben Smegelsky*

A spent booster from space shuttle Discovery's final launch is seen bobbing in the Atlantic Ocean on Feb. 26. Click on the photo above to follow along with the crews of Freedom Star and Liberty Star as they recover the shuttle's boosters.



NASA/Ben Smegelsky

Chief Mate Jamie Harris charts the Atlantic Ocean on Feb. 24 in preparation for a solid rocket booster recovery operation.

NASA/Ben Smegelsky

Freedom Star's crane lifts a booster nose cap out of the Atlantic Ocean on Feb. 25.

CLICK ON PHOTO *NASA/Frank Michaux*

On Feb. 26, a Liberty Star diver helps retrieve a spent booster from space shuttle Discovery's STS-133 launch. To learn more about NASA's solid rocket booster retrieval ships, Liberty Star and Freedom Star, click on the photo above.

NASA/Ben Smegelsky

In the Atlantic Ocean on Feb. 26, debris and water are pumped out of a spent solid rocket booster from space shuttle Discovery's final launch. This makes it easier for Freedom Star and Liberty Star to transport the booster back to shore.

NASA/Ben Smegelsky

A massive parachute from a spent solid rocket booster is rolled up on the deck of Freedom Star on Feb. 26.

NASA/Jim Grossmann

Liberty Star, with a booster in tow, is docked in Port Canaveral, Fla., on Feb. 28. A cruise ship is seen in the background.

NASA/Jim Grossmann

A spent booster is unloaded onto a hoisting slip at the Solid Rocket Booster Disassembly Facility on Feb. 28.

NASA/Jim Grossmann

Technicians inspect a spent booster outside Hangar AF at Cape Canaveral Air Force Station in Florida on March 3.

CLICK ON PHOTO *NASA file/2002*

Hear from Capt. David S. Fraine, who has been a part of the solid rocket booster recovery process for almost 30 years, by clicking on the photo above.

NASA/Jack Pfaller

On March 3, a spent booster is moved into Hangar AF at Cape Canaveral Air Force Station, where it will be cleaned.

NASA Employees of the Month: March

NASA/Gina Mitchell-Ryall

Employees for the month of March are, from left, Amy E. O'Brien, Human Resource Office; Alicia Mendoza, Launch Vehicle Processing Directorate; Amy Canfield, Safety and Mission Assurance Directorate; Janet Mayers, Information Technology and Communications Services; Dina Hoffman, Education and External Relations; Dorothea Kuzma, Center Operations; and Dwight "Lance" Rogers, Engineering Directorate. Not pictured are, Tonya Fuentes, Chief Counsel; Matthew Jolley, Constellation Project Office; Nancy Zeitlin, Engineering Directorate; Gloria McIntosh, Procurement Office; and Ayman Abdallah, Launch Services Program.

Looking up and ahead . . .

Targeted for April 19 Planned for May 3	Launch/KSC: Endeavour, STS-134; 7:48 p.m. EDT Landing/KSC: Endeavour, STS-134; 1:27 p.m. EDT
No Earlier Than April 30	Launch/CCAFS: Atlas V, SBIRS GEO-1; TBD
No Earlier Than June 23	Launch/CCAFS: Atlas V, GPS IIF-2; TBD
No Earlier Than June 9	Launch/VAFB: Delta II, Aquarius / SAC-D Satellite; TBD
Targeted for June 28	Launch/KSC: Atlantis, STS-135; 3:48 p.m. EDT
No Earlier Than July 15	Launch/CCAFS: SpaceX Falcon 9, Dragon C2; TBD
Aug. 5	Launch/CCAFS: Atlas V, Juno; Launch Window 12:10 to 1:40 p.m. EDT
Sept. 8	Launch/CCAFS: Delta II Heavy, GRAIL; 8:35:52 a.m. to 9:14:35 a.m. EDT
No Earlier Than Oct. 9	Launch/CCAFS: SpaceX Falcon 9, Dragon C3; TBD
Oct. 25	Launch/VAFB: Delta II Heavy, NPP; TBD
No Earlier Than Nov. 25	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD
No Earlier Than December	Launch/CCAFS: Delta IV-Heavy, NROL-15; TBD
No Earlier Than Dec. 7	Launch/CCAFS: SpaceX Falcon 9, Dragon C4; TBD
Early 2012	Launch/CCAFS: Atlas V, AEHF 2; TBD

Seen From Kennedy Space Center

Photo courtesy of Pat Corkery, United Launch Alliance

U.S. Air Force launches Atlas V, OTV-2

A United Launch Alliance Atlas V rocket with the Air Force's second Orbital Test Vehicle (OTV-2) launches March 5 from Launch Complex-41 at 5:46 p.m. EST. The OTV, also known as the X-37B, supports space experimentation, risk reduction, and concept of operations development for long-duration and reusable space vehicle technologies.

John F. Kennedy Space Center

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